in which

A stands for S, Se or Te;

R_1, R_2 and R_3 stand for alkyl, substituted alkyl, alkenyl, phenyl, substituted phenyl, benzyl, cycloalkyl, substituted cycloalkyl, R_1, R_2 and R_3 being the same or different; and

X^- stands for an anion of an inorganic or organic acid or hydroxide, provided that the acid selected to constitute component (b) is not identical to the sulfinic, seleninic or tellurinic acids selected as component (d).

B1

B2 3. (Twice Amended) The process of claim 1, wherein the intergranular etched surface comprises intergranular crevices having an aspect ratio of about 2 or greater.

2 43. (Amended) The process of claim 1, wherein component (c) comprises one or more triazoles, tetrazoles, imidazoles, pyrazoles and purines.

2 8 3 44. (Amended) The process of claim 1, wherein component (d) is a sulfinic acid selected from aromatic sulfinic acids and compounds having the formula:

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B3

$$R_4R_5N-C(=NR_6)-SO_2H$$

wherein R_4, R_5 and R_6 = H, alkyl, substituted alkyl, phenyl, substituted phenyl, R_7-(CO)- with R_7 = H, alkyl, substituted alkyl, phenyl, substituted phenyl, wherein R_4, R_5 and R_6 may be the same or different.

2 9 45. (Amended) The process of claim 1, wherein component (d) is formamidine sulfinic acid.

B

30 46. (Amended) The process of claim 1, wherein component (d) comprises one or more heterocyclic compounds selected from thiophenes, thiazoles, isothiazoles, thiadiazoles, and thiatriazoles.

31 47. (Amended) The process of claim 1, wherein component (d) comprises one or more sulfinic acid compounds selected from benzene sulfinic acid, toluene sulfinic acid, chlorobenzene sulfinic acid, nitrobenzene sulfinic acid and carboxybenzene sulfinic acid.

B3

32 48. (Amended) The process of claim 1, wherein component (d) comprises one or more sulfonium salts selected from trimethyl sulfonium salts, triphenyl sulfonium salts, methioninealkyl sulfonium salts, and methionine benzylsulfonium salts.

52 50. (Amended) The process of claim 51, wherein the sulfonic acid or salt thereof includes one or more aromatic groups which are carbocyclic rings.

53 51. (Amended) The process of claim 51, wherein the composition further comprises 0.1 to 2% w/v of a corrosion inhibitor selected from triazoles, tetrazoles, imidazoles, and mixtures thereof.

B4

54 52. (Amended) The process of claim 51, wherein the sulfonic acid or salt thereof is sodium m-nitrobenzene sulfonate.

A version of the above amended claims marked to indicate the specific amendments may be found in the attached Appendix, in accordance with 37 CFR 1.121(c)(1).

Please cancel claims 32-42, 49 and 53-63.

Please add the following new claims 84-125:

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34 84. (New) The process of claim 9, further comprising a step of adhering the immersion metal plated surface to a surface of a polymeric non-conductive material.

35 85. (New) The process of claim 34, wherein the polymeric nonconductive material is one or more of PTFE, an epoxy resin, a polyimide, a polycyanate ester, a butadiene terephthalate resin.

36 86. (New) The process of claim 33, wherein the steps of intergranular etching and applying the immersion plated metal are carried out in a continuous process.

BS 37 87. (New) The process of claim 36, wherein the metal substrate is in contact with the immersion plating composition for a time from about 1 second to about 900 seconds.

38 88. (New) The process of claim 33, wherein the immersion plated metal is tin.

39 89. (New) The process of claim 33, further comprising a step of applying a silane over the immersion plated metal from an aqueous solution of a silane.

40 90. (New) The process of claim 39 wherein the silane comprises:

(i) a ureido silane having the structure

$$B_{(4-n)}\text{–Si–(A–N(H)–C(O)–NH}_2)_n$$

wherein (A) is an alkylene group containing from 1 to about 8 carbon atoms, (B) is a hydroxy or alkoxy group containing from 1 to 8 carbon atoms, and n is an integer from 1 to 3 provided that if n is 1 or 2, each (B) may be the same or different; and

(ii) a disylyl crosslinking agent having the structure

$(R^5O)_3$–Si–R^6–Si–$(OR^5)_3$

wherein each R^5 is independently an alkyl group containing from 1 to about 8 carbon atoms, and R^6 is an alkylene group containing 1 to about 8 carbon atoms.

91. (New) The process of claim 89 wherein the silane comprises a trimethoxysilylpropyl modified polyethyleneimine.

92. (New) The process of claim 89, wherein the aqueous solution of a silane comprises about 0.5 wt% to about 3 wt% of one or more of diethoxymethylsilylpropyltriethoxysilane, tris (triethoxysilylpropyl) amine, a trimethoxy silyl propyl modified polyethyleneimine, and a mixture of γ-ureidopropyltriethoxysilane and bis(triethoxysilyl) ethane.

93. (New) The process of claim 89, wherein the aqueous solution of a silane has a pH in the range from about 2 to about 8.

94. (New) The process of claim 9, wherein the immersion plating composition further comprises a thiourea compound.

95. (New) The process of claim 94, wherein the immersion plating composition further comprises a urea compound.

96. (New) The process of claim 9, wherein the immersion plating composition comprises the at least one plating metal in the form of a salt of the metal.

97. (New) The process of claim 9, wherein the immersion plated metal has a thickness in the range from about 4 microinches to about 300 microinches.

98. (New) The process of claim 97, wherein the immersion plating composition comprises (a) a salt of the plating metal, (b) an acid selected from mineral acids, carboxylic acids and hydrocarbyl-substituted sulfonic acids, (c) a complexing agent and (d) water.

99. (New) The process of claim 98, wherein (a) is a stannous salt.

100. (New) The process of claim 98, wherein (a) is a stannous salt of a hydrocarbyl-substituted sulfonic acid, and (b) is the hydrocarbyl-substituted sulfonic acid.

101. (New) A process for treating a metal substrate to improve adhesion of polymeric materials thereto, comprising the steps of

intergranular etching a surface of the metal substrate; and

applying an immersion plated metal to the intergranular etched surface by immersing the surface in an immersion plating composition comprising one or more plating metals selected from tin, silver, bismuth, copper, nickel, lead, zinc, indium, palladium, platinum, gold, cadmium, ruthenium, cobalt, gallium and germanium,

wherein the step of intergranular etching is carried out with an intergranular etching composition comprising:

0.5 to 5% w/v hydrogen peroxide; and

0.01 to 5% w/v of an aromatic sulfonic acid or a salt thereof.

102. (New) The process of claim 101, wherein the intergranular etched surface comprises intergranular crevices having an aspect ratio of about 1 or greater.

103. (New) The process of claim 101, wherein the intergranular etched surface comprises intergranular crevices having an aspect ratio of about 2 or greater.

104. (New) The process of claim 101, wherein the intergranular etched surface comprises intergranular crevices having a depth of about 1 micron or greater.

105. (New) The process of claim 101, wherein, when the intergranular etched surface is divided into a grid of squares 10 microns on each side, at least 50% of the squares include at least one intergranular crevice having an aspect ratio of at least 1.

106. (New) The process of claim 105, wherein at least 75% of the squares include at least one intergranular crevice having an aspect ratio of at least 1.

107. (New) The process of claim 105, wherein at least 90% of the squares include at least one intergranular crevice having an aspect ratio of at least 1.

108. (New) The process of claim 105, wherein said at least one intergranular crevice has an aspect ratio of at least 2.

109. (New) The process of claim 101, further comprising a step of adhering the immersion metal plated surface to a surface of a polymeric non-conductive material.

110. (New) The process of claim 109, wherein the polymeric nonconductive material is one or more of PTFE, an epoxy resin, a polyimide, a polycyanate ester, a butadiene terephthalate resin.

111. (New) The process of claim 101, wherein the steps of intergranular etching and applying the immersion plated metal are carried out in a continuous process.

112. (New) The process of claim 111, wherein the metal substrate is in contact with the immersion plating composition for a time from about 1 second to about 900 seconds.

113. (New) The process of claim 101, wherein the immersion plated metal is tin.

114. (New) The process of claim 101, further comprising a step of applying a silane over the immersion plated metal from an aqueous solution of a silane.

115. (New) The process of claim 114 wherein the silane comprises:

(i) a ureido silane having the structure

$$B_{(4-n)}–Si–(A–N(H)–C(O)–NH_2)_n$$

wherein (A) is an alkylene group containing from 1 to about 8 carbon atoms, (B) is a hydroxy or alkoxy group containing from 1 to 8 carbon atoms, and n is an integer from 1 to 3 provided that if n is 1 or 2, each (B) may be the same or different; and

(ii) a disylyl crosslinking agent having the structure

$$(R^5O)_3–Si–R^6–Si–(OR^5)_3$$

wherein each R^5 is independently an alkyl group containing from 1 to about 8 carbon atoms, and R^6 is an alkylene group containing 1 to about 8 carbon atoms.

116. (New) The process of claim 114, wherein the silane comprises a trimethoxysilylpropyl modified polyethyleneimine.

117. (New) The process of claim 114, wherein the aqueous solution of a silane comprises about 0.5 wt% to about 3 wt% of one or more of diethoxymethylsilylpropyltriethoxysilane, tris (triethoxysilylpropyl) amine, a trimethoxy silyl

propyl modified polyethyleneimine, and a mixture of γ-ureidopropyltriethoxysilane and bis(triethoxysilyl) ethane.

118. (New) The process of claim 114, wherein the aqueous solution of a silane has a pH in the range from about 2 to about 8.

119. (New) The process of claim 101, wherein the immersion plating composition further comprises a thiourea compound.

120. (New) The process of claim 119, wherein the immersion plating composition further comprises a urea compound.

121. (New) The process of claim 101, wherein the immersion plating composition comprises the at least one plating metal in the form of a salt of the metal.

122. (New) The process of claim 101, wherein the immersion plated metal has a thickness in the range from about 4 microinches to about 300 microinches.

123. (New) The process of claim 101 wherein the immersion plating composition comprises (a) a salt of the plating metal, (b) an acid selected from mineral acids, carboxylic acids and hydrocarbyl-substituted sulfonic acids, (c) a complexing agent and (d) water.

124. (New) The process of claim 123, wherein (a) is a stannous salt.

125. (New) The process of claim 123, wherein (a) is a stannous salt of a hydrocarbyl-substituted sulfonic acid, and (b) is the hydrocarbyl-substituted sulfonic acid.